

REMARKS

Claims 11-16 and 18-26 are pending in this application. All previous rejections have been withdrawn and all pending claims are now newly and finally rejected in the pending Office Communication. Claims 22-24 are rejected under 35 USC 103(a) as being unpatentable over Konter in view of Paulonis. Claims 11-13, 18, 20-21 and 25 are rejected under 35 USC 103(a) as being unpatentable over Konter in view of Terkelsen and further in view of Paulonis. Claims 14 and 15 are rejected under 35 USC 103(a) as being unpatentable over Konter in view of Terkelsen and Paulonis and further in view of Schnell. Claims 16, 19 and 26 are rejected as being unpatentable under 35 USC 103(a) over Konter in view of Terkelsen and Paulonis and further in view of Caballero.

Entry of claim amendments requested:

Claim 11 has been amended herein to eliminate the duplicative and potentially confusing phrase “where no single-crystal or directional structure occurs”. This phrase modifies the noun “layer” and is thus duplicative with the last element of the claim, and further, it might potentially be misinterpreted as modifying the noun “substrate”. Accordingly, it is deleted herein, and its deletion causes no need for additional searching or consideration.

Claims 14 and 15 are reworded for clarification only, consistent with the original claims and with the last paragraph on page 9 of the specification. No additional searching or consideration is required by these amendments.

Claim 18 is cancelled herein because it is inconsistent with the limitations of its parent claim 11 and does not satisfy the requirements of 35 USC 112, second paragraph.

Entry of these amendments is respectfully requested under 37 CFR 1.116.

Introductory comments regarding prior art rejections:

The Applicants appreciate the fact that the Examiner has withdrawn the previous rejections in view of the Applicants’ amendments and remarks, and that the Examiner has duly conducted additional searching as deemed appropriate. The currently pending rejections are very similar to those previously exerted against the claims, but with the addition of the Paulonis reference (US 4,005,988). The Examiner has appreciated that the primary reference to Konter

(US 6,405,435) is deficient in that Konter teaches the deposition of a ceramic intermediate layer between two directional layers rather than the claimed non-directional intermediate metallic material. The Examiner now cites Paulonis as teaching a non-directional diffusion bonding layer disposed between two metal surfaces that are to be diffusion bonded.

The combination of Konter and Paulonis is improper:

Every pending claim rejection rests upon the Examiner's proposed combination of Konter and Paulonis, in some cases along with various other references. The Examiner states on page 6 of the Office Communication that "It would have been obvious ... to modify the teachings of Konter ... through providing a metallic intermediate layer for the super-alloy component in order to further improve the quality of the finished joints of the component layers by promoting the homogeneity of the component through reducing the bonding cycle time and bonding temperature, as suggested by Paulonis...". However, the modification of Konter with the teaching of Paulonis is improper because it would destroy the functionality of Konter.

MPEP 2143.01(V) makes it clear that there is no suggestion or motivation to modify a reference if the modification would render the prior art unsatisfactory for its intended purpose. The filling material 3 of Konter is a fugitive material that is later selectively removed by etching to form cooling passages. If one were to modify Konter by using the metallic intermediate layer of Paulonis as the filling material, then the metallic intermediate layer could not be selectively etched away and therefore would not function as a fugitive material. This would destroy the functionality of the Konter reference because no cooling passage would be formed. Thus, there is no motivation to modify Konter as taught by Paulonis because that would render the device of Konter unsatisfactory for its intended purpose, and no *prima facie* case for obviousness has been established for any of the pending claims because all of the rejections rely at least in part on this combination.

Further, the Examiner's stated justification for combining Konter and Paulonis also relies upon a motivation to reduce "bonding cycle time and bonding temperature". However, there is no "bonding cycle time" in Konter because Konter utilizes a powder deposition process as illustrated in FIG. 4 of Konter, rather than a diffusion bonding process. Thus, the Examiner's stated motivation fails to provide a *prima facie* case for making the combination.

Further, the Examiner also relies on a motivation “to improve the quality of the finished joints”. However, Konter specifically teaches away from any joining of the metal layers in the region of the intermediate material, since he wants to create an open space for a cooling channel which is later formed when the ceramic intermediate material is etched away. Thus it would not be obvious to a person skilled in the art at the time of the invention to try to use the metallic intermediate layer of Paulonis to improve the joint of Konter by adding a metal into the area where a cooling channel is intended to be formed.

Accordingly, withdrawal of all of the pending rejections is respectfully requested due to a lack of motivation for combining the primary reference (Konter) with a secondary reference (Paulonis) as is deemed necessary by the Examiner to support every pending rejection under 35 USC 103.

The combination of Konter in view of Terkelsen and Paulonis teaches away from the invention:

The Examiner proposes to modify Konter in view of Terkelsen and Paulonis as the basis for the rejection of many of the pending claims. However, this combination actually teaches away from the present invention.

If one were to replace the ceramic intermediate material 3 of Konter with metallic layer such as in Paulonis by using the seed method of Terkelsen, the resulting intermediate layer will be directionally solidified. This would allow any defect present in the surface of the substrate to grow into the intermediate layer, and subsequently into the top layer. This is exactly the problem that the present invention solves. The pending claims all include the limitation that the intermediate layer is non-directional, whereas the method of Terkelsen purposefully results in a directionally solidified layer. Thus, the proposed combination teaches away from the present claims and fails to establish a *prima facie* case for obviousness of claims 11-16, 19-21, 25 and 26.

Conclusion:

Entry of this amendment and allowance of claims 11-16 and 19-26 are respectfully requested. Should the Examiner not find the above arguments persuasive for allowance, entry of the claim amendments under 37 CFR 1.116 is respectfully requested to place the claims into

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better form for consideration upon appeal. The commissioner is hereby authorized to charge any appropriate fees due in connection with this paper, including the fees specified in 37 C.F.R. §§ 1.16 (c), 1.17(a)(1) and 1.20(d), or credit any overpayments to Deposit Account No. 19-2179.

Respectfully submitted,

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